

Claims

a bendable and/or solderable layer of

5 1. A method of plating silver on a substrate by a displacement plating reaction provided with a copper surface comprising

a) depositing a first metal which is more noble than copper on the substrate in a first method step and

10 b) plating silver on said substrate in a second method step, with the proviso that the first metal is deposited at a rate that is at most half the rate of plating of silver in the second method step when the first metal is silver.

15 2. The method according to claim 1, wherein the first metal is palladium or gold.

3. The method according to claim 2, wherein palladium is plated from an acidic solution.

20 4. The method according to one of the claims 2 and 3, wherein palladium is plated from a solution containing sulfuric acid.

25 5. The method according to claim 1, wherein the first metal is silver and the rate of silver deposition from a silver deposition bath in the first method step is regulated by adjusting at least one deposition parameter and/or by adjusting the composition of the silver bath.

6. The method according to claim 5, wherein the rate of silver deposition in the first method step is regulated by adjusting the processing temperature.

30 7. The method according to one of the claims 5 and 6, wherein the rate of deposition of the silver in the first method step is regulated by using a Cu(I) complexing agent in the silver bath.

8. The method according to one of the previous claims, **wherein** silver is plated in the second method step with a plating bath containing at least one silver halide complex.

5 9. The method according to claim 8, **wherein** the silver halide complex is a silver bromide complex.

10. The method according to one of the previous claims, **wherein** silver is plated in the second method step with a bath having a pH ranging from 4 to 6.

10 11. The method according to one of the previous claims, **wherein** silver is plated in the second method step with a plating bath that additionally contains at least one Cu(I) complexing agent.

15 12. The method according to claim 11, **wherein** the at least one Cu(I) complexing agent is selected from the group comprising 2,2'-bipyridine, 1,10-phenanthroline, 2,6-bis-[pyridyl-(2)]-pyridine, 2,2'-bichinolin, 2,2'-bipyridine-5-carboxylic acid, 2,2'-bipyridine-4,4'-dicarboxylic acid, 4,7-dihydroxy-1,10-phenanthroline as well as derivatives thereof.

20 13. The method according to one of the previous claims, **wherein** silver is plated in the second method step with a plating bath that additionally contains at least one Cu(II) complexing agent.

25 14. The method according to claim 13, **wherein** the at least one Cu(II) complexing agent is selected from the group comprising ethylene diamine, alanine diacetic acid, amino trimethylene phosphonic acid, diethylene triamine pentamethylene phosphonic acid and 1-hydroxyethylene-1,1-diphosphonic acid.

30 15. The method according to one of the previous claims, **wherein** silver is plated in the second method step with a plating bath that additionally contains

at least one surface active agent.

16. The method according to one of the previous claims, **wherein** the substrate is cleaned and/or etched prior to performing the first method step.

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17. The method according to claim 16, **wherein**, for cleaning and/or etching, the substrate is contacted with an acidic solution containing at least one peroxy compound selected from the group comprising alkali peroxy disulfate, alkali caroate and hydrogen peroxide prior to performing the first method step.

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18. The method according to one of the previous claims, **wherein** the method is carried out as a horizontal conveyorized method.

15 19. The method according to one of the previous claims, **wherein** the substrate is a printed circuit board material and wherein in the second method step silver is plated for subsequently performing a soldering process, a bonding process, for press-fit technology and/or for making electrical contacts.